"COMMERCIAL SPACE TRANSPORTATION AND THE INDUSTRIES IT ENABLES: ECONOMIC IMPACTS AND MARKET DEVELOPMENT"

REMARKS BY

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Remarks by Patti Grace Smith

Let me start my presentation by saying that I am really pleased to be leading this session this morning at the International Space University Symposium. It's an honor to be here to address you, especially to the students and staff of the ISU, a group that is accomplishing such an important service by providing graduate-level training to the future leaders of our emerging global space community. There is no doubt in my mind that there are able replacements for each of us right here among you. I had the opportunity to address the ISU four years ago and it is wonderful to witness its growth and increasing important in our field.

Since that time, my office and the ISU have signed a Memorandum of Understanding as the FAA and the ISU share a common interest in promoting commercial space through education. We are also proud that John Carlson, one of our recent interns at my

office is attending the ISU following his summer in Washington. In the future we expect to have additional opportunities to collaborate and conduct workshops of mutual interest to both the ISU and the FAA.

While this morning, I will be speaking about the state of the launch market and the economic impact of the space industry, I want to first remark on FAA's role in the space launch industry and the impact of the recent launch of SpaceShipOne that I witnessed in early October. This was an event envisioned by one of the creators of the International Space University, Dr. Peter Diamandis, who first worked to establish the International Space University and most recently realized his dream for the XPRIZE Foundation. If you know anything about Peter, you know that the XPRIZE was momentary accomplishment, he's off and running with the XPRIZE Cup now and no doubt a number of other space related things.

I realize for some, that the work of my organization, AST, the FAA's Commercial Space Transportation office, may be somewhat unfamiliar. You may not know about the ways the FAA is helping to shape the landscape for the next century of space flight.

We are the only office in the US government responsible for licensing, regulating and promoting the US commercial launch industry. The office opened in 1984 as a result of the first Commercial Space Launch Act and was located, at that time, in the Office of the Secretary of Transportation. AST, as we are known in the FAA, licensed its first launch of an expendable, vertically launched rocket in 1989.

This year, however, has been one of spectacular milestones and new beginnings. In the 20 years since AST was first granted the authority to regulate commercial space launch operations, never

before have we been as busy and seen so much progress in launch vehicle development. It would have been hard to miss the news about the recent launches of SpaceShipOne, designed by Burt Rutan, from Mojave Airport in California, now also a spaceport. As most of you know it is the first private, manned vehicle to reach space. For us, this feat represented not only confirmation of the exceptional licensing and safety work done by my staff and Rutan's company, Scaled Composites, but the beginning of a new chapter in commercial space transportation. This historic launch marked the dawn of a new generation of commercial space transportation vehicles, signaling the coming of regular passenger transportation to and from space.

Another first for us this year was the awarding of the first FAA Commercial Astronaut Wings to Mike Melvill, who on June 21st, piloted the SpaceShipOne to 337,500 feet. That moment was truly memorable for me, as I could see in Mike's eyes when I handed

him the very first pair of commercial astronaut wings, that it was for him too. The FAA Administrator had the opportunity on October 4th to award the next set of wings to Brian Binnie, America's second private astronaut. These are just some of the exciting things that are taking place in the space transportation industry.

Our office sees itself as enabling the commercial space launch industry through our licensing process, which contributes to the outstanding safety record of the US industry. As we exercise our responsibility to protect the safety of the public, we work closely with developers to analyze the safety implications of their designs and their predicted flight paths.

The development of the FAA astronaut wings are as much a celebration of the industry's technical achievement as a recognition that our Number 1 concern will always be public safety.

During our 20-year history, FAA/AST has licensed and overseen 167 commercial space launches with an accident-free record. We celebrate this record, but realize it can only be maintained by total commitment to a safety regime that works in cooperation with our partners in the Air Force, NASA, and industry.

This year, we are expecting to see a marked increase in the number of FAA-licensed launches of both expendable and reusable launch vehicles. We have already overseen 13 licensed launches this year, including five launches of the reusable launch vehicle SpaceShipOne, with up to two more launches before the end of the year, an ATLAS V and Sea Launch This is an increase over 2003, when we had eight FAA-licensed launches. Two-thousand four is our most active year since 1999 and we will likely see more commercial launches in the U.S. this year than either NASA or DoD will conduct combined.

U.S. launch revenue for fiscal year 2004 (October to the end of September) was about $585 million compared to fiscal year 2003 launch revenue of about $535 million.

I spoke briefly about SpaceShipOne, but we've seen other exciting new entrants to the commercial space transportation market. Elon Musk, who is here today on this panel is the founder of Space Exploration Technologies Corporation, known as SpaceX, and has introduced its Falcon I expendable launch vehicle, that will conduct its first launch to orbit for the Air Force in 2005 at a price well below current market prices. Unveiling last year in front of our Air and Space Museum just a short distance away from our offices and from our legislative bodies the US Congress.

Should SpaceX be successful (as we know it will be!) they will have succeeded in lowering the cost of access to space. The FAA, the DOD and others are very interested in this possibility for what it

will mean to the Nation's need for assured access and for its ability to compete in the world market.

We will soon be working with Sir Richard Branson, the owner of Virgin Airlines, who announced that starting in 2007, he will begin flying customers into space aboard a fleet of 5 passenger rockets on a service he will call Virgin Galactic. This could be the beginning of the space transportation version of Regional Jets in aviation. I am told that without any advertising or any formal announcement, they had 10 million hit to their website and 7,000 reservation with down payments. WOW!

In addition to licensing launches, AST is also responsible for regulating non-federal launch site operations. FAA/AST has previously licensed four non-federal launch sites in the United States – in California, Florida, Virginia, and Alaska. This year we added a fifth – the Mojave Airport in California – making it the first U.S. inland launch

site licensed by AST. We are working with other potential launch sites in Oklahoma and New Mexico on their applications.

In the future, we anticipate there will be a network of non-federal launch sites throughout the United States, enabling a commercial launch sector that is responsive to both national needs and emerging applications such as space tourism. We are already seeing companies take advantage of these potential opportunities by locating near future space launch sites. It is these new opportunities for orbital and suborbital launches that will create the next giant leap for space transportation. The leap to a commercially-driven and innovative launch sector will empower our progress in space flight. The promise of suborbital, and eventually orbital, space tourism holds benefits for all users of our national aerospace system.

Commercial space transportation represents a critical sector to the U.S. economy and to the states in which commercial space activities occur. AST recently completed a study where we examined the contributions of commercial space transportation, and other industries space transportation enables, to the nation's economy. We found that in 2002, commercial space transportation and related industries were responsible for more than $95 billion in economic activity, $23.5 billion in earnings, and 576,400 jobs. We experience the benefits of space transportation and its related industries daily, such as commercial satellite imagery used for mapping and agriculture, satellite communications that provide us with television, Internet, credit-card purchasing, digital radio, and many other services that are seamlessly integrated into daily life.

We expect the number of jobs resulting from commercial space transportation to grow in the future, particularly as some of these new RLV developments come to fruition. In March of this year, *Business Week* magazine named commercial space among the top five innovative industries that could drive a new job boom. It placed commercial space among telecommunications, biotechnology, nanotechnology, and energy in terms of potential job growth. I am absolutely thrilled by this prospect!

Now, considering the future that lies ahead, many of us were also heartened and excited by President Bush's announcement last January outlining a challenging new vision for our nation's space program, a renewed commitment to boldly pursue knowledge and discovery.

Laying out this new vision for U.S. space exploration does not directly address the future of the commercial launch industry. The Aldridge

Commission's report on implementation of this new vision recommends that NASA "recognize and implement a far larger presence of private industry in space operations with the specific goal of allowing private industry to assume the primary role of providing services to NASA, and most immediately in accessing low-Earth orbit. In NASA decisions, the preferred choice for operational activities must be competitively awarded contracts with private and non-profit organizations…"

The delivery of cargo in support of the exploration initiative would seem a real opportunity, particularly after the shuttle is phased out in 2010. We at the FAA firmly believe that the space transportation industry has the capability and innovation to meet the needs of NASA as it works toward a return to the Moon and exploration of Mars, as well as to meet short-term goals at the International Space Station and in low-Earth orbit. I am encouraged by NASA's recent

Request for Information on the capabilities and market interests from existing and emerging commercial launch providers to shape future NASA exploration acquisition strategy. I truly believe that President Bush's initiative will also open the door for more commercial and private sector opportunities to exploit the potential of space.

The FAA is also supportive of publicly-funded prizes, such as the NASA Centennial Challenges, which will lead to new technological developments and creative approaches to the problems posed by long-range space exploration.

On the commercial space front, private space travel or human space flights will be one of our biggest challenges, a challenge we embrace fully. Legislation enabling human space flight means that we must be fully prepared for this future. We must prepare the future workforce and lay the foundation for the business they will be engaged in. It's wonderful to have ISU as a partner in preparing

young people to assume positions that support developments in space. You play an increasingly important role in the future of space.

Before I leave you with some thoughts about my personal vision for the future, I want to emphasize this last point. I know that the ISU understands the importance of education to today's aerospace businesses. But we have recently seen that the number of young men and women studying for jobs in aerospace has been decreasing. It is one of FAA's goals to promote educational initiatives that will help to build the workforce for tomorrow, especially in the areas of science and technology. AST is committed to supporting this goal through our own educational outreach program. We participate in the annual Space Day events, the Team America Rocketry Challenge, provide educational materials to various organizations, and we most recently published a new education and outreach brochure, soon to be complemented by a new

education Web site describing the skills needed for specific space careers. We are working with the Aerospace Industries Association on one of its top priorities, which is developing an action plan for revitalizing the aerospace workforce. In this effort, we are partnered with the Departments of Labor, Commerce, Education, NASA, and the Department of Defense. Reaching out to young people may be the toughest connection we all have to make to promote the future of the space industry. It's a connection that we will be counting on you and others to help us make it. It is also one of the most important, which is why it is crucial for all of us – whether in industry, government, or academia – to speak with the same voice, and the same optimism, about space and the opportunities that await these future innovators. I know that you share in the message of the importance of persuing opportunities to support space

development. I welcome opportunities for us to continue to partner in this endeavor.

So, as I wrap up, I'd like you to think with me about the following questions: What will change – what will be different as a result of actions we take today? Will different skill sets be needed in the future space sector? What will be the qualifications for the pilots and crew of the future space passenger vehicles? Is it worthwhile to think about space traffic controllers as we plan the future? What should space related businesses prepare for?

If you will, please pause with me for a moment… and envision an intermodal transportation system – where air, land, sea, and space all converge. In this vision, heavy lift launch operations, conducted from national launch centers, work as part of a network with non-government operators fed by scientific, commercial and defense-related needs. Businesses – both manufacturing and service

industries (hotels, restaurants, fuel providers, cleaning, tourist services) – thrive around the spaceport much like today's major airports. Routine missions to low-Earth orbit and beyond occur on an hourly basis – taking advantage of the communications, navigation, and surveillance capabilities our military has to offer and are interwoven with a well-coordinated, real-time space and air traffic control system.

I can hear the announcement now: Now boarding, Virgin Galactic space launch #102 to Moon Base 3. Final packages for space cargo to Alaska, launch pad C-15. Witness Falcon I or ATLAS V from SLC 6. What a day that will be. With government, industry and supporting organizations working hand-in-hand, this true Aerospace System will become a reality.

Thank you very much for inviting me to share this time with you and I look forward t your questions.